

9 (2, 3)

CZECH/14-59-12-5/41

AUTHOR: Klen, Bohdan

TITLE: The Tube RES XL and Applied Czechoslovak Patents

PERIODICAL: Sdělovací technika, 1959, Nr 12, pp 448-449

ABSTRACT: In this article the author gives a short description of the new short-wave tube Tesla RES XL and its variant RES XN and mentions the patents applied for. This tube is to be used for transmitters working in the third TV band. The RES XL tube was developed in the Vršovice Enterprise of Tesla-Rožnov by the collective of Mareš, decorated with the Order of Labor, and applied in cooperation with P. Hix, awarded the State prize. The tube is a tetrode with an idle capacity of 5kw, a self-carrying cathode and cage-shaped self-carrying grid. A schematic presentation of the tube is in Fig 1. Special attention was given to the cathode. The directly heated cathode of the tube is composed of 16 leads of thoriumized wolfram forming a cage-shaped cylindrical construction. According to


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CZECH/14-59-12-5/41

The Tube RES XL and Applied Czechoslovak Patents

patent Nr 90.158, each lead of the cathode is weakened on both ends so that its resistance is not equal everywhere. The other patents applied in the described tube are the following: Nr 88.940, 90.472, 92.091, 90.472, 89.318, 89.280 and 91.378. In his conclusion, the author stresses the importance of the vacuum technique for the task of catching up with the most industrially developed countries. The results achieved in this field are a proof of the ability of Czechoslovak technical personnel. There is 1 diagram and 1 photograph.



Card 2/2

5/196/62/000/011/004/009  
E194/E155

AUTHORS: Klen, Bohdan, and Turinek, Stanislav

TITLE: A method of making a gas-dielectric capacitor

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika,  
no.11, 1962, 7, abstract 11 B53. (Czechoslovak  
Patent, 21 g, 10/01, no.98787, 15 March 1961).

TEXT: The invention relates to high-frequency gas-filled capacitors. The general construction of the capacitor and details of the fixing rods which carry the system of low-voltage plates are patented. The ends of the rods are threaded and screwed into a projection on the capacitor cover. A cylindrical nut screws directly into this projection; a second nut which maintains the system of rods in tension has a projecting head which surrounds the first nut. Longitudinal cuts are made in the head of the second nut to make it lie smoothly. A general constructional diagram of the capacitor is given, also a detailed sketch of the rod fixing. 2 figures.

[Abstractor's note: Complete translation.]

Card 1/1

KLEN, R.

Tissue banks. Oesk. nemoc. 20 no.7-10:120-121 Sept-Dec 1952. (CLML 23:4)

✓ Biochemistry of the human cornea. M. Kanckit and R. Klen. *Physiol. Bohemoslov.* 3: 318-26 (1954). Chromatographic isolation of free amino acids from numerous human corneas showed that 8-10 amino acids are usually present in the free state, in the following descending order of prevalence: alanine, glutamic acid, leucine, glycine, asparagine, and serine, being the most common, as determined by depth of ninhydrin color on the chromatograms. Aspartic acid is absent. Samples taken 2-3 hours after death are very low in amino acids. No difference in amino-N between stroma and endothelium was found. — O. M. Kozulapov.

*Expt. Pathological Physiology*  
VMA i Tkanenya Tsvetral rays lab. v. Pratten Kholov

KLEN, Rudolf

Titer changes of group antibodies in keratoplasty. Cesk. ofth.  
11 no.3:129-135 June 55.

1. Klinika nemocnice VLA, KUNZ v Hradci Kralove - Tkanova ustredna.  
(CORNEAL TRANSPLANTATION  
antibodies titer changes)  
(ANTIGENS AND ANTIBODIES  
antibodies in corneal transpla., titer changes)

ADICA Sec.4 Vol.9/7 Klen R., etc. Jan 55

1864. KLEN R. Klin. nemocn. VLA J. Ev. Purkyně; Tkáňová banka, Hradec Králové. \*Změny titrů protilátek systému ABO a Rh při keratoplastikách. (II. Hodnocení 50 případů). Changes in antibody titres of the ABO and Rh system. II. Evaluation of 50 cases ČSL.OFTHAL. 1955, 11/4-5 (246-249) Graphs 1 Tables 1

No anti-Rh bodies were found in 5 Rh-negative receivers onto whom a graft from Rh-positive persons was implanted. Changes of titres of antibodies of the ABO system occurred in 1/3 of operated patients when the donor had the same blood group of the ABO system; in about 1/2 of the cases, when the donor belonged to the O group; and in more than 2/3 of cases when the blood groups of both receiver and donor were incompatible.

Zahn - Prague (XII, 4)

EXCERPTA MEDICA Sec.9 Vol.11/4 Surgery April 57

1693 (372) KLEN H. and SKROVINA B. \*Růstová zóna-nový materiál ke kostním plastikám. The growth zone - a new material for bony plastics ROHŽL. CHIR. 1955, 34/8 (479-483) Illus. 5  
On the basis of animal experiments, which were reported during the second conference on transplantations in Hradec Kralové (1954), the authors believe they have found in spongiosa of the growing zone of the scapula of one-year-old calves, a material which in a special way stimulates osteogenesis even in heterotransplantations. By this means the time of union may be shortened by one third to one half of that when compact heterogenous bone grafts are employed. The bone tissue was taken from the cartilagenous and bony border of the scapula. The spongiosa has a red colour and the zones from which the tissue was taken are accurately described. The transplants are particularly suitable for cases where a mechanical strength is not needed. The method was employed in man with good results, but final conclusions are still awaited.

Endler - Vienna



**KLEN, R., Dr; SKROVINA, B., Dr**

Solution for preservation of bone and cartilage tissues. Roshl.  
chir. 34 no.8:483-487 Oct 55.

1. Tkanova ustredna a katedra orthopedie VLA  
(BONE TISSUE, transplantation,  
preserv. solution (Cs))  
(CARTILAGE, transplantation,  
preserv. solution (Cs))  
(TRANSPLANTATION,  
bone & cartilage, preserv. solution (Cs))

KLEN, Rudolf, MUDr.

Results and problems of the tissue bank of the Military Medical  
Academy of J. Ev. Purkyne. Cas. lek. cesk. 95 no.28-29:786-787  
13 July 56.

1. Klinika nemocnice Vojenske lekarske akademie J. Ev. P., KUMZ  
Hradec Kralove, Tkanova Banka.  
(TRANSPLANTATION,  
tissue banks in Czech. (Cs))

KISEN, R.

Contribution to the study of some mechanical properties of preserved vascular grafts.

P. 297 (Ceskoslovenska Biologie) Vol. 6, no. 4, July 1957. Praha, Czechoslovakia.

SO: Monthly Index of East European Accessions (EEAI) LC, Vol. 7, no. 1, Jan. 1958

KLEN, R.

EXCERPTA MEDICA Sec.12 Vol.11/9 Ophthalmology Sept 57

1466. KLEN R. and KÁNSKÝ M. Klin. Nemocn. VLA JevP, KÚNZ, Hradec Králové.  
Hladina gama globulinu po perforativních keratoplastikách. The  $\gamma$ -globu-  
lin level after perforating keratoplasty ČSL.OPTHAL. 1957,  
13/1 (29-31)

Electrophoretic examination of the  $\gamma$ -globulin fraction of the blood serum is sug-  
gested as a possible means of ascertaining the immunobiological changes produced  
in the recipient organism by the graft. In 9 out of 13 cases no changes in the  
 $\gamma$ -globulin level were found, in 4 cases the level was increased after keratoplasty.  
No conclusions can be drawn as yet.  
Zahn - Prague

CZECHOSLOVAKIA/Human and Animal Physiology. Blood. Blood Groups.

T

Iss Jour: Ref Zhur-Biol., No 20, 1958, 93107.

Author : Klon, *Rudolf*

Inst :

Title : Possibility of Rh-Antibody Formation with Tissue Transplants to Rh(D)-Negative Individuals.

Orig Pub: Rozhl. chirurg., 1957, 35, No 9, 616-619.

Abstract: Twenty-three Rh-negative patients were studied for the presence of Rh-antibody after they had received transplants of cornea and rib bone from the bank from Rh<sub>0</sub>-positive donors and corneas from Rh(D)-negative donors and calf bones from the bank. Rh-antibody was not detected after prolonged observation. --  
A.I. Geronimus.

Card : 1/1

*Klinika nemocnic VLA JEvP Tkanova Banka  
KUNZ Header Kralove*

KRYSPIN, J.; KLEN, R.

Changes of ohm resistance of fish cornea in hypotonic environment. Cesk. fysiол. 7 no.3:250-251 May 58.

1. laborator plasticke chirurgie CSAV, Praha, a Tkanova banka VIA, Hradec Kralove.

(CORNEA, physiol.

ohm. resist. in fish in hypotonic environment (Cs))

(FISH

corneal ohm resist. in hypotonic environment (Cs))

KLEN, R.

Certain aspects of tissue conservation in low temperatures. Cesk. fysiол.  
7 no.4:341 July 58.

1. Tkanova banka--Vojenska lekarska akademie, KUNZ Hradec Kralove.  
    (TRANSPLANTATION,  
      of tissue grafts (Cs))  
    (REFRIGERATION,  
      of grafts (Cs))

KRYSPIN, J.; KLEN, R.

Electrophysiological study of corneal hydration. I. Measurement in fresh water fish. Cesk. fysiол. 14 no.4:233-239 Aug 58.

1. Elektrofysiologicka laborator neurochirurgicke kliniky a tkanova banka VIA J. Ev. P. v Hradci Kralove. J. K. CSAV, Praha 2, Lagerova 61.

(CORNEA, physiol.

hydration in fresh water fish, electrophysiol. (Cs))

(WATER, metab.

corneal hydration in fresh water fish, electrophysiol. (Cs))



KLEN, Rudol'f

Surface changes in bone and cartilage transplants caused by cold.  
Ortop.travm. i protes 19 no.2:38-40 Mr-Apr '58 (MIRA 11:5)

1. Iz klinicheskoy bol'nitsy Vayenno-meditsinskoy akademii  
im. Ya.Ye Purkin'ye i Tkanevogo banka Oblastnogo instituta  
sdravookhraneniya (Gradets Kralove, Chexoslovakiya).

(BONE AND BONES, transpl.

surface changes caused by cold. (Rus))

(CARTILAGE, transpl.

same)

(COLD, eff.

surface changes in bone & cartilage transpl.

EX BPTA. JIC. Sec. 6 Vol 13/12 Internat red. Dec 59

7178. THE CHOICE OF VASCULAR GRAFTS. ARTERIO-ENDOSCOPY - Contribution au choix des greffes vasculaires. L'artério-endoscopie - Kien R. Banque des Tissus, Hôp. Clin. de Hradec Králové - LYON CHIR. 1958, 84/4 (549-554) illus. 8

The condition of the vascular endothelium is very important for the choice of a vascular graft. This can be observed only in the neighbourhood of both its ends. In the case of a long graft only a small part of the endothelial surface is visible. By means of palpation only profound changes can be recognized. Histological investigation gives only local information. This gap is filled by means of a new kind of endoscopy-arterioendoscopy. This method is described and typical pictures are shown. The author finds that arterioendoscopy is a simple and convenient examination for the choice of vascular grafts according to the condition of the endothelial surface.

(IX, 8, 18)

KLEB, R.

Methods for the macroscopic selection of blood vessel grafts. Rev. Czech.  
M. 4 no.4:335-340 1959.

1. The Tissue Bank of the District Institute of National Health at Hradec  
Kralove.

(BLOOD VESSELS, transplantation  
selection of grafts by macroscopic methods)

KLAN, Rudolf

Experiences in collection and preservation of the aqueous humor.  
Cesk. ofth. 15 no.2:102-104 Apr 59.

1. KUNE - Tkmnova ustredna, Hradec Kralove.  
(AQUEOUS HUMOR,  
collection & preserv. (Cs))

FIALA, O.; HEROUT, V.; KLEN, R.

Behaviour and fate of conserved homogenous articular cartilage  
under experimental conditions. Acta chir. plast. 3 no.2:154-156 '61.

1. Orthopaedic Clinic, Director: Prof. J. Vavra, M.D., Institute of  
Pathology, Director: Prof. A. Fingerland M.D., Dr. Sc., Tissue Bank,  
Director: R. Klen, M.D. Hradec Kralove (Czechoslovakia)

(CARTILAGE transplantation)

KLEN, R.; SYKORA, I.

Is the relative vitality of frozen and thawed tissue of diagnostic significance? Folia biol. 7 no.5:373-376 '61.

1. Regional Institute of National Health, Tissue Bank, Hradec Kralov, Institute of Pharmacy and Biochemistry, Prague, Rosice Branch, Rosice and Leben.  
(CYTODIAGNOSIS) (REFRIGERATION)

**FIALA, Oldrich; HEROUT, Vladimir; KLEN, Rudolf.**

Repair of joint defects with homogenous cartilages in experimental conditions. Acta chir. orthop. trauma. Cech. 28 no.6:463-468 D '61.

1. Ortopedická klinika lékařské fakulty University Karlovy v Hradci Kralove, prednosta prof. MUDr. Jaroslav Vavrda Ustav pathologicke anatomie v Hradci Kralove, prednosta prof. MUDr. Antonin Fingerlam, Dr. Sc. Tkanova ustredna fakultni nemocnice v Hradci Kralove, prednosta MUDr. Rudolf Klen.

(JOINTS surg)

(CARTILAGE transpl)

KLEN, Rudolf, doktor; KRISHPIN, Yan [Kryspin, Jan], doktor;  
SHIYEROVA, Aleksandra [Schierova, Alexandra], doktor  
fil. [translator]

[Preparation and preservation of tissues] Zagotovka i kon-  
servirovanie tkanei. Prague. Gos.izd-vo med. lit-ry, 1962.  
316 p. Translated from the Czech. (MIRA 16:12)  
(TISSUES—PRESERVATION)



CZECHOSLOVAKIA

FIALA, O., MD; HEROUT, V., MD; KLEN, R., MD.

~~Orthopedics~~ Orthopedics Clinic of the Institute of Pathological  
Anatomy and Tissue Center (Ortopedická klinika, Ústav  
patologické anatomie a tkáňová ústředna), Hradec Králové  
(for all)

Prague, Praktický lékař, no 19, 1963, p 73 753

~~Transplants~~ "Transplant of a Joint Surface in Experiment."

KLEN, R.

Use of chemically dried fascia in reconstructive surgery.  
Rosh. chir. 42 no.9:605-610 8 '63.

1. Tkanova ustredna fakultni nemocnice KUNZ v Hradci Kralove.  
(FASCIA) (SURGERY, PLASTIC) (TRANSPLANTATION)  
(SILICA) (GELS) (TISSUE BANKS) (PHOSPHORUS)

KJEN, R., MUDr.

Methods and organizational problems in supplying tissue  
banks. Cesk. mirav. 12 no.1s26-29 Ja'64.

1. Tkanova ustredna fakultni nemocnice KUMK v Hradsi  
Kralove.

\*

KLEN, Rudolf, MUDr.

Some remarks on the clinical aspects of transplantation.  
Sborn. ved. prac. lek. fak. Karlov. Univ. (Hrad. Kral.)  
6 no.3: Supplementa 297-304 '63

1. Prednosta Tkanove ustredny fakultni nemocnice KUNZ, Hradeo  
Kralove.

\*

Alch, R.

Problems of the theory and practice of clinical transposition. Acta chir.  
orthop. traum. tech. 31 no. 5:398-412, 1964.

1. Tkachenko, V. I. Fakul'tni nauchnye y issledovaniya.

KIEN, Rudol'f

Problems of tissues preparation and preservation. Ortop., travn.  
i protez. no.9:16-23 '62. (MIFA 17:11)

1. Iz tkanekhranilishche Oblastnogo lechetno-profilakticheskogo  
ob"yedineniya, Gradets Kralove, Chekhoslovakiya.

KLEN, R.; YIRASEK, Yu. [Jirasek, J.]

48/ Fate of homogenous cartilaginous grafts with a partial loss  
of protein-polysaccharide complexes of the matrix. Ortop.,  
travm. i protez. 25 no.4:14-17 Ap '64 (MIRA 18:1)

1. Iz Tkanekhranilishcha oblastnogo meditsinskogo ob'yedineniya  
(Gradets Kralove) i Instituta materi i rebenka (Praga). Adres  
Klena: Gradets Kralove, Chekhoslovakiya, Tkanekhranilishche  
klinicheskoy bol'nitsy meditsinskogo fakul'teta Karlova uni-  
versiteta.

KLEN, R.

The tasks of the tissue bank in clinical transplantations. Acta  
chir. plast. (Praha) 7 no.3:221-227 '65.

1. Tissue Bank, University Hospital, Hradec Kralove (Czechoslovakia).



KLEN, Rudolf . Technicka spoluprace: HUSEK, Z.; JEZEK, K.

Activities of the Collecting Center for human milk at the  
Tissue Bank of the Faculty Hospital, Regional Institute  
of National Health at Hradec Kralove. Sborn. ved. prac. lek.  
fak. Karlov. Univ. 8 no.3:321-329 ' 65.

KLEN, Rudolf

Indications and contraindications of the removal of tissues  
for transplantations. Sborn. ved. prac. lek. fak. Karlov.  
univ.:Suppl. 8 no.5:563-568 '65.

1. Tissue Bank (Head Dr. R. Klen, CSc.).

L 13463-66

ACC NR: AP6006019

SOURCE CODE: CZ/0053/65/014/004/0280/0281

AUTHOR: Klen, R.; Hradil, F.; Sykora, I.

ORG: Central Tissue Laboratory, Faculty Hospital, KUNZ, Hradec Kralove (KUNZ -  
Fakultni nemocnice - Tkanova ustredna); Research Institute of Pharmacology and  
Biochemistry, Rosice (Vyskumny ustav pro farmaci a biochemii)

TITLE: Role of increased temperature in the growth of Crocker sarcoma [This paper  
was presented during Biophysical Days, Brno, 12 Jun 64.]

SOURCE: Ceskoslovenska fysiologie, v. 14, no. 4, 1965, 280-281

TOPIC TAGS: mouse, tumor, temperature

ABSTRACT: Environmental temperature significantly affect the growth of transplanted  
Crocker murine sarcoma S-180 the optimal (slowest growth over 30 days)  
temperature being 36° C. The effect of temperature is not decreased by previous  
adaptation of mice so as to increase the host tolerance. Orig. art. has: 1 figure.  
[JPRS]

SUB CODE: 06 / SUBM DATE: none

L 13462-66

ACC NR: AP6006018

SOURCE CODE: CZ/0053/65/011/001/0280/0280

AUTHOR: Klen, R.; Fulka, J.

ORG: Central Tissue Laboratory, Faculty Hospital, KUNZ, Hradec Kralove (KUNZ Fakultni nemocnice - Tkanova ustredna); Laboratory of Physiology and Genetics of Animals CSAZV, Libechov (CSAZV - laborator fyziologie a genetiky zivoicichu)

TITLE: Application of pressure in the conservative of semen by freezing [This paper was presented during Biophysical Days, Brno, 12 Jun 64.]

SOURCE: Ceskoslovenska fyziologie, v. 14, no. 4, 1965, 280

TOPIC TAGS: biologic reproduction, animal physiology

ABSTRACT: Study of bull spermatozoa freezing aiming to utilize the role of changes in pressure to optimize the equilibrium ice: steam indicates that the best pressure in 1000 atmospheres at temperature of  $-65^{\circ}\text{C}$ . [JPRS]

SUB CODE: 06 / SUBM DATE: none

Card 1/1 HW

KLEN, S.

Use of artificail air in drying kilns. p. 132.  
STAVIVO. (Ministerstvo stavebnictvi) Praha.  
Vol. 34, no. 4, April 1956.

SOURCE: East European Accessions List, (EEAL),  
Library of Congress. Vol. 4, no. 12,  
December 1955.

K... , S.

"1 for words on the protection of national property on machine-tractor stations."

p.197 (Mechanizatsiya Vozdelstviya, Vol. 2, no. 2, May 1948, Praha, Czechoslovakia)

Monthly Index of East European Literature (EMIL) 17, Vol. 7, no. 1, 1948

ALUMINUM, ..

"How to put generators into operation before the stator insulator is dry." p. 313.  
(Energetika, Vol. 3, no. 9, Sept. 1953. Praha.)

SO: Monthly List of East European Accessions, Vol. 3, no. 6, Library of Congress, June 1954.  
Uncl.

ACC NR: AT6028379

SOURCE CODE: UR/0000/65/000/000/0142/0154 /5

AUTHOR: Bachin, A. P.; Bekzhanov, G. R.; Brodovoy, V. V.; Gol'dshmidt, V. I.; Zhivoderov, A. R.; Zlavdinov, L. Z.; Ivanov, O. D.; Klénchin, I. N.; Kolmogorov, Yu. A.; Kotlyarov, V. M.; Kuz'min, Yu. I.; Kuminova, H. V.; Kunin, N. Ya.; Lyubetskiy, V. G.; Melant'yev, M. I.; Hirczov, H. D.; Tret'yakov, V. G.; Tychkova, T. V.; Tsaregradskiy, V. A.; Eydlin, R. A.

ORG: none

TITLE: Geophysical sketch map of Kazakhstan

SOURCE: International Geological Congress. 22d, New Delhi, 1964, Geologicheskaya rezul'taty prikladnoy geofiziki (Geological results of applied geophysics); doklady sovetskikh geologov, problema 2. Moscow, Izd-vo Nedra, 1965, 142-154

TOPIC TAGS: ~~Kazakhstan~~ geophysics, map, ~~geophysical mapping~~, tectonics, ~~geological~~ regional study

ABSTRACT: On the basis of regional geophysical and geological investigations (seismic, gravimetric, magnetoelectric), a composite geophysical sketch map of the physical fields of Kazakhstan has been compiled. From this map, the major tectonic zones, deep structures, and geological structural zones are defined. Long zones representing high field gradients in the gravitational and magnetic fields reflect deep geosutures, which seismic sounding data suggest are scarps in the M-discontinuity.

Card 1/2



ACC NR: AT6028379

Among the major structural zones of Kazakhstan defined are: 1) the Turgayskaya, 2) the Petropavlovskaya, 3) the Uspenskaya, 4) the Tokrauskaya, and 5) the Dzhalair-Naymanskaya. Regions of magmatism are also defined. In the tectonic depression zones, contour lines indicate the thickness of the sedimentary cover, overlying the folded basement, and possible oil-bearing formations. Orig. art. has: 1 figure. [DH]

SUB CODE: 08/ SUBM DATE: 06Jan65/ ATD PRESS: 5063

Curd 2/2

S/169/62/000/005/014/093  
D228/D307

AUTHORS: Yeremin, V. K., Klenchin, N. N., Udris, K. P. and  
Stucheviskiy, N. I.

TITLE: Geologic surveying and geophysical operating procedure  
in conditions of enclosed regions

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1962, 23, ab-  
stract 5A179 (V sb. Geol., metodika i tekhn. razved-  
ki, labor. raboty, (5), Alma-Ata, 1961, 19-28)

TEXT: In conditions of enclosed regions geophysical research me-  
thods lead in the general complex of geologic operations and begin  
with regional investigations. Seismic, gravimetric, electric and  
magnetic prospecting, accompanied by drilling, are used in this  
stage. Complex areal investigations at a scale of 1:200,000 in  
sections, outlined by the regional survey, represent the next stage  
of depth mapping. The investigational complex includes: aeromagne-  
tic and aerelectric prospecting, gravimetric prospecting, electric  
prospecting by the B33 (VEZ) and A33 (DEZ) methods, geologic sur-

Card 1/2

LISOWSKI, Andrzej; KIENCZAR, Henryk

Deep gangways and their significance for the increase of  
production. Wiadom gorn 12 no.9:295-299 S '61.

LISOWSKI, Andrzej, dr., ins.; KLEPCZAR, Henryk, mgr., ins.

Some informations on linear programming and an example of its application. Przegl gorn 18 no.2:128-137 '62.

LISOWSKI, Andrzej; KIENCZAR, Henryk

Indentation galleries for both individual and compressed walls.  
Wiadom gorn 12 no. 11:361-367 N '61.

LISOWSKI, Andrzej, dr ins.; KLINCZAR, Henryk, mgr ins.

Deep headings for single and stressed walls conducted with  
break down through the entire thickness of the layer.  
Wiadom gorn 13 no.9:294-300 s :62.

TOKMAKOVA, Irina Alekseyevna, kand. tekhn. nauk; KLENDI, M.A.,  
inzh., nauchnyy red.; YUDINA, L.A., red. ~~YUD-VI~~;  
MIKHAYEVA, A.A., tekhn. red.

[Using mortars and concretes with addition of potash in  
winter construction work] Primenenie rastvorov i betonov s  
dobavkoi potasha pri proizvodstve stroitel'nykh rabot v  
zimnee vremia. Moskva, Gosstroizdat, 1963. 79 p.

(MIRA 16:7)

(Potash) (Concrete) (Mortar)

MALICHOVSKIY, Rudol'f [Malichovsky, Rudolf], inzh.; KHEVROLIN,  
Ya.I [translator]; KLEDO, M.A., inzh. nauchn. red.;  
GORDEYEV, P.A., red.

[Assembling structural elements of industrial buildings.  
Abridged translation from the Czech] Montazh stroitel'-  
nykh konstruktsii promyshlennykh sooruzhenii. Moskva,  
Stroizdat, 1964. 86 p. (MIRA 17:6)



ZHUCHIN, D.I.; KONSTANTINOV, S.V.; PROZOROVSKIY, O.N.; SEMENOV,  
S.G.; KHARKHARDIN, L.S.; KLEDO, M.A., inzh., nauchn. red.;  
PEREVALYUK, M.V., red.

[Rural construction in the Virgin Territory] Sel'skoe  
stroitel'stvo v Tselinnom krae. Moskva, Stroizdat, 1964.  
89 p. (MIRA 17:9)

BEL'SKIY, Viktor Isenovich; CHERNOV, Aleksandr Vasil'yevich;  
KLENDI, M.A., inzh., nauchn. red.

[Brickwork and assembly of industrial furnaces and smoke-  
stacks] Kladka i montazh promyshlennykh pechei i zavodskikh  
trub. Moskva, Stroiizdat, 1964. 234 p. (MIRA 17:6)

LOMAKIN, Vasily Andreyevich, inzh.; MARKOV, Dmitriy Aleksandrovich,  
inzh.; KLENDI, M.A., inzh., nauchn. red. [deceased]

[Technology and organization of construction work] Tekhnologia i organizatsiya stroitel'nogo proizvodstva. Moskva, Stroizdat, 1964. 366 p. (MIRA 18:1)

KLEVENKOY, M.Y., polkovnik meditsinskoy sluzhby

One hundred and fiftieth anniversary of the Kazan Military Hospital.  
Voen.-med.shur. no.12:83 '59. (MIRA 14:1)

(KAZAN—HOSPITALS, MILITARY)

STARIK, I.Ye.; ARSLANOV, Kh.A.; KLENER, I.R.

Improved techniques for the chemical preparation of samples for  
radiocarbon dating by the scintillation method. Radiokhimiia 5  
no.2:198-205 '63. (MIRA 16:10)

KLENER, P.; JANOTA, M.; STEJSKAL, J.

Renal damage in pyrabutol treatment. Cas. lek. cesk. 104 no.24:  
650-653 18 Je'65.

1. II. 'nterni klinika fakulty vseobecneho lekarstvi Karlovy  
University v Praze (prednosta: prof. dr. F. Herles, DrSc.) a  
I. Patologickoanatomicky ustav fakulty vseobecneho lekarstvi  
Karlovy University v Praze (prednosta: prof. dr. B. Bednar,  
DrSc.).

KLENER, P.; DONNER, L.

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lek.63 no.1:18-24 Ja '61.

1. II. interni klinika fakulty vseobecneho lekarstvi University  
Karlovy v Praze, prednosta prof.dr. F.Herles.  
(BLOOD PLATELETS)  
(ARTERIOSCLEROSIS blood)  
(FATS)

KLEIER, P.

Therapeutic agents in hemoblastosis. Cas. lek. cesk. 103  
no.20:81-85 15 My'64

1. II. interni klinika fakulty vseobecneho lekarstvi KU (Kar-  
lovy university) v Praze.



KLENER, Pavel

SURNAME, Given Names

Country: Czechoslovakia

Academic Degrees: /not given/

Affiliation: Second Internal Clinic of the Faculty of General Medicine, KU /Kar  
lova universita; Charles University/ (II. vnitřní klinika fakulty  
všeobecného lékařství KU), Prague; Director: Prof František HERLICH

Source: Prague, Vnitřní Lékařství, Vol VII, No 6, June 61, pp 694-701. MD

Data: "Physiological Properties of Blood Platelets and Their Importance  
for the Haemostasis."

59

**KLENER, Vladislav**

Biological effects of small doses of ionizing radiation on the human body. Prac. lek. 17 no.6:260-264 Ag '65.

1. Ustav hygieny prace a chorob z povolani v Praze (reditel prof. dr. J. Teisinger, DrSc.).

TRUELLE, Marcel A.; KLENER, Vladislav

Loss of an emitter used in defectoscopic field work. Prac. lek.  
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TUSCANY, Richard; KLAWER, Vladimir; KUDRNA, Jan.

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1. Ustav hygieny prace a chorob z povolani v Praze (reditel: prof. dr. J. Teisinger, DrSc) a Oddeleni hygieny prace HES NV [Hygienicko-epidemiologicka stanice narodni vybor], Praha (vedouci: MUDr. A. Grunvald).

KLENER, Vladislav

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Ichthyosis congenita gravis. Report on two cases. Ann. univ.  
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Akademii Medycznej w Lublinie Kierownik: prof. dr med. Stanisław  
Makhsburg.

(ICHTHYOSIS in inf & child)

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1. Department of General and Experimental Pathology, Medical  
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Reversible modification of electrophoretic properties of  
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1. Z Zakladu Patologii Ogolnej i Doswiadczalnej AM w Bialym-  
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DEH TSZIN-CHENUN [Teng Ching-chang]; THAO VAN'-ZHU [TS'ao Van-ju]; LI  
 SUN-SHEN [Li Sung-sheng]; XHU SYUY-VNY [Hu Hsu-wei]; SUN' PAN'-SHOU  
 [Sun P'an-shou]; FAN VEN' [Fan Wen]; LI VEN'-YAN' [Li Wen-yen];  
 LYAN SHEN'-TSAY [Liang Jün-ts'ai]; LI MU-CHZHEN' [Li Mu-chen];  
 ZABIROV, B.Sh. [translator]; KLENIN, I.D. [translator]; SHIRYAYEV,  
 S.L. [translator]; SUN' TSZIN-CHENI' [Sun Ching-chin], otv.red.;  
 BERONR, Ya.M., red.; KOSHELEVA, S.M., tekhn.red.; KISLEVA, Z.A.,  
 red.kart

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U-4, 153

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I. KLENIN, author of Tsamuroz ovnia i bor'ba s nim ("Coccidiosis of Sheep and Its Control) Chkalov, Chkal. izd. 1951. 4 pages (Chkal. obl. Administration of Agriculture. Administration of Agricultural Propaganda, Chkal. obl. Scientific Veterinary Society). Unbound. 1,500 copies. (from: NEW BOOKS ON VETERINARY MEDICINE Veterinariya, No. 11, pp. 63,64. Nov. 1951, Moscow, Russian no per.)

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KLENIN, I. I.

1. KLENIN, author of Yinnos sviney i kurnogo rosnatoy shota. nary por'by a nim  
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U-4502; 28 August 1953.

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<sup>E</sup>  
KLONIN, I. I.

<sup>E</sup>  
KLONIN, I. I.: Transferrers of invasive and infectious diseases of agricultural animals and the measures of the fight against them. Chkalov. Chkalov Publishing House. 1952. 13 pages. Free. 2,500 copies. (Chkalov Oblast Administration of Agriculture, Administration of Agricultural Propaganda, Veterinary Department.

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KLENIN, I. I., Doc Vet Sci (diss) -- "Estrosis of sheep and measures to combat it under the conditions of Orenburg Oblast". Khar'kov, 1959. 28 pp (Min Agric USSR, Khar'kov Vet Inst), 350 copies (KL, No 21, 1959, 118)

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(MIRA 10:4)

1. Moskovskiy Institut mekhanizatsii i elektrifikatsii sel'skogo  
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(Soil mechanics)

POPOV, I.F., dots.; KLENNIN, N.I., inzh.

Effect of the mounting of rear wheels of tractor plows on the  
tractive resistance. Trakt. i sel'khoz mash. no.2:28 N '59.

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1. Moskovskiy institut mekhanizatsii i elektrifikatsii sel'skogo  
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KLENIN, N. I., Cand Tech Sci -- (diss) "Research into the process of warping of soil by solid bodies." Moscow, 1960. 22 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Moscow Inst of Mechanization and Electrification of Agriculture); 170 copies; price not given; (KL, 23-60, 124)

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process of soil deformation affects the resistance to deformation.  
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(Soil mechanics)

KLENIN, N.I., dots.; POPOV, I.F., dots.; SERGEYEV, A.S., dots.;  
SOLDV'YEV, V.M., dots.; TIMOFEYEV, A.I., dots.; SIMELY,  
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red.; DUDAKOV, V.A., tekhn. red.

[Manual on practical exercises with agricultural machines  
and implements] Praktikum po sel'skokhoziaistvennym mashinam  
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1963. 319 p. (MIRA 17:2)

KLENIN, O.I., assistant

The principles of material self-interest and its utilization in wages for track maintenance workers. Trudy MIIT no.166:86-104  
'62. (MIRA 16:6)

(Wages—Railroads)



KLENIN, S. I.

262T76

USSR/Physics - Polystyrene

1 Jan 53

"Diffusion of Fractions of Polystyrene in Dichloroethane," V. N. Tavetkov and S. I. Klenin, Inst of High Mol Comps, Acad Sci USSR

DAN SSSR, Vol 88, No 1, pp 49-52

Investigate sample of polystyrene obtained by block polymerisation of monomer at temp of  $60^{\circ}$ . The sample was fractionated and mol wt of fractions computed (see Outer, Carr, Zimm. J. Chem Phys, 18, 830 (1950)). Results showed that radii of spheres hydrodynamically equivalent to mol globule are proportional to square roots of mass of macromol, computed from light scattering. Received 16 Oct 52.

262T76

**AUTHORS:** Tsvetkov, V. M., Klenin, S. I. 57-28-5-18/36

**TITLE:** Diffusion and Viscosity of Solutions of Polymethylmethacrylate and of Polyparatertiary Butylphenylmethacrylate (Diffuziya i vyaskost' rastvorov polimetilmetakrilata i poliparatretichnogo butilfenilmetakrilata)

**PERIODICAL:** Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 5, pp. 1019-1028 (USSR)

**ABSTRACT:** The diffusion velocity of polymers in diluted solution represents one of the immediate characteristics of its molecular size. Therefore it is possible to pass a judgement on the structure of its macromolecules from the determination of the diffusion coefficient of the polymer in the solution. In the present paper the authors applied this method to the comparative examination of the properties of polymethylmethacrylate (PMMA) and of polyparatertiary butylphenylmethacrylate (PBPMMA). These compounds represent polymers with identical chain structure of the basic valence, however, with a different size and structure of the molecular side groups. The dependence of the characteristic viscosities<sup>[1]</sup> and of the diffusion coefficients D on the molecular weight of the fraction was given for two

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Diffusion and Viscosity of Solutions of Polymethylmethacrylate 57-28-5-18/36  
and of Polyparatertiary Butylphenylmethacrylate

investigated polymers in a logarithmic scale (figures 9 and 10). These points coincide with the straight lines corresponding to the following functions. For PMMA in chloroform holds:

$$[\eta] = 5.1 \cdot 10^{-5} \cdot M^{0.79} \quad D = 4.5 \cdot 10^{-4} \cdot M^{-0.60}$$

and for PBPHMA in chloroform

$$[\eta] = 2.4 \cdot 10^{-5} \cdot M^{0.78} \quad D = 6.0 \cdot 10^{-4} \cdot M^{-0.60}$$

As is known, a universal interrelation exists between the diffusion coefficient  $D$  and the characteristic viscosity  $[\eta]$  of the polymer fraction in the corresponding solvent, (Refs 8 and 9). If the hydrodynamical properties of the molecular tangle in the solution is described by means of equivalent, semi-transparent spheres, as it is done in the theory by Debye-Bueche (Ref 13), the ratio between the hydrodynamical molecular radius from the viscosity  $R_\eta$  and the radius from diffusion  $R_D$  is

$$\frac{R_\eta}{R_D} = \frac{6\pi}{k} \left( \frac{30}{\pi N} \right)^{1/3} \{ \eta_0 D (M[\eta])^{0.5} T^{-1} \}^{1/2} (\sigma) \left( \frac{2.5}{\varphi(\sigma)} \right)^{1/2}$$

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Hence, the quantity  $A = \eta_0 D T^{-1} (M[\eta])^{0.5}$  differs from the ratio

Diffusion and Viscosity of Solutions of Polymethylmetacrylate 57-28-5-18/36  
and of Polyparatertiary Butylphenylmetacrylate

$\frac{R_z}{R_D}$  only by the numerical multiplicand. The theory by Flory shows analogous results (Ref 14). Experiments show that the quantity  $A$  proportional to the ratio  $R_z/R_D$  represents a universal constant, its most probable value being  $A=3.44 \cdot 10^{-10}$   $\frac{\text{cm}^3}{\text{g}}$ . The proportion of the viscosity- and hydrodynamic diffusion radii permits to immediately obtain the interrelation between the size of the macromolecules and the diffusion coefficient. Summary: In this paper a device for the measurement of the diffusion coefficient in solutions is described. It is based upon the application of the polarization interferometer! The diffusion and the viscosity of the solutions of polymethylmetacrylate and of polybutylphenylmetacrylate in the wide interval of the molecular balance was investigated. A simple relation was obtained, which permits to determine the size of the macromolecules in the solution according to the measured diffusion coefficients. The experimental results permit to conclude that rotation in the chains of polybutylphenylmetacrylate is more impeded than is the case in the chains of polymethylmetacrylate. There are 13 figures, 3 tables, and 14 references, 10 of which are Soviet.

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Diffusion and Viscosity of Solutions of Polymethylmetacrylate 57-28-5-18/36  
and of Polyparatertiary Butylphenylmetacrylate.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad  
(Leningrad, Institute for High-Molecular Compounds, AS USSR)

SUBMITTED: July 23, 1957

1. Polymers--Diffusion 2. Polymers--Viscosity

Card 4/4

KLENIN, S. I.

Cand Phys-Math Sci, Diss -- "Investigation of diffusion of polymer solutions by the polarisation interferometry method". Leningrad, 1961. 17 pp, 20 cm (Leningrad Order of Lenin State U imeni A. A. Zhdanov), 180 copies, Not for sale, list of works by the author on pp 16-17 (KL, No 9, 1961, p 175, No 24250). 61-558717

KLENIN, S.I., PRITSYN, O.B.

Interpretation of experimental data on the translational friction of flexible macromolecules in good solvents. Vysokom.sood. 3 no.6:912-918 Je '61. (MIRA 14:6)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.  
(Macromolecular compounds)

KLENIN, S. I.

33383  
S/190/62/004/002/014/021  
B110/B101

15 1500

AUTHORS: Bresler, S. Ye., Pyrkov, L. M., Frenkel', S. Ya.,  
Layus, L. A., Klenin, S. I.

TITLE: Molecular conformation, and hydrodynamic and mechanical  
properties of 4:3 styrene - isoprene bulk copolymer

PERIODICAL: Vyssokomolekulyarnyye soedineniya, v. 4, no. 2, 1962, 250-255

TEXT: The authors studied the hydrodynamic and mechanical properties of hybrid polymers on the basis of the selective solubility of one type of blocks in the corresponding solvent to make a quantitative estimate of the conformation changes of macromolecules dependent on the solvent, and to measure the mechanical properties of the resulting films. They investigated 4:3 styrene - isoprene bulk copolymer (BCSI) made with butyl lithium and consisting of four polystyrene (PS) and five polyisoprene (PI) blocks. The molecular weight determined in methyl ethyl ketone was  $M = 77,000$ , that of PS:  $M \approx 10,000$ , that of PI:  $M \approx 7500$ . Solvents used were: benzene, toluene, heptane, octane, and methyl ethyl ketone. 0.1 mm thick films were obtained from 1 g/100 ml of solutions in heptane

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Molecular conformation, and...

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and methyl ethyl ketone on Mg surface at 25°C and 20 mm Hg. The diffusion coefficients were determined at 0.05% concentration by a Tsvetkov diffusometer. The sedimentation coefficients were determined by a Svedberg ultracentrifuge. The molecular weight was calculated according to Svedberg:  $M = (SRT)/[D(1-\bar{v}_0)]$  (2), and Flory and Mandelkern,  $2.5 \cdot 10^6 = [\eta M / (1-\bar{v}_0)] [S(L\eta)/M^2]^{1/3}$  (3), where  $N$  - Avogadro's number;  $\rho$  - density, and  $\eta$  - viscosity of the solvent. (3) presupposes conformation of statistical nodes of macromolecules, the linear dimensions being proportional to  $M^{1/2+\epsilon}$  ( $\epsilon$  - small parameter). The coincidence of different mean weights in different solvents indicates weak polydispersity. The absence of a relation between  $M_v$  and  $M_{sp}$  and the mean hydrodynamic weights  $M_{sp}$  and  $M_{Dp}$  demonstrates the unsuitability of the model of statistical nodes. The PI blocks keep the octane-insoluble PS blocks in solution. Therefore, they form small pearls threaded on the polyisoprene string. In methyl ethyl ketone, it is vice versa. Flory's theory does not apply to this case. There is no relationship between "viscous" and

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Molecular conformation, and...

"diffusion" inertia radii for selective solvents. It follows that, in these solvents, the molecules are converted from statistical nodes into half-stiff particles, to which Fig. 26,  $\epsilon$  does not apply but Fig. 21 according to Schlick and Levy (see below). Films obtained from octane, heptane, and hexane solutions of BCSI with evaporation of the solvent are rubberlike, nontransparent, and highly elastic. Films from methyl ethyl ketone remind of plasticized PS. Films (A) obtained from heptane would resume their old shape when the loading ends, the more solid films (B) from methyl ethyl ketone to a smaller extent. (A) has:  $E \approx 10 \text{ kg/cm}^2$

like rubber. (B) has  $E \approx 200 \text{ kg/cm}^2$ . Films from benzene are mechanically similar to (B). Blocks with globules "remember" their conformation on transition into the film. (A) may be regarded as polyisoprene with chemically bound, glassy filler, (B) as PS with chemically bound plasticizer. "Tempering" occurs during film formation; during "annealing", the globules develop, and the properties of the film correspond to those of film obtained from benzene. There are 3 figures, 2 tables, and 9 references: 7 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: F. M. Morrett, J. Polymer. Sci., 24, 467, 1957. S. Schlick, M. Levy, J. Phys. Chem., 64, 883, 1960.

Card 3/4

Molecular conformation, and...

33383  
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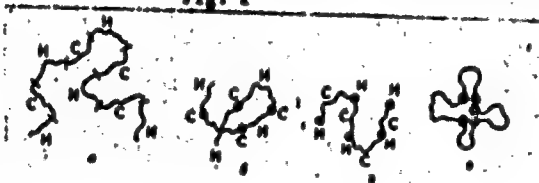
ASSOCIATION: Institut vysokomolekulyarnykh soedineniy AN SSSR  
(Institute of High Molecular Compounds AS USSR)

SUBMITTED: February 10, 1961

Fig. 2. Diagram of the conformation of BCST molecules in various solvents.

Legend: (a) Benzene (good solvent for both types of blocks); (C) octane;  
(b) methyl ethyl ketone; (i) structure to be suggested in selective  
solvents ("unsoluble" blocks aggregated); C - styrene blocks; H - isoprene  
blocks.

Fig. 2



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5.4100  
15.8050

AUTHORS:

Tavetkov, V. N., Klenin, S. I., Frenkel', S. Ya., Pomicheva, O. V., Zhuze, A. G.

TITLE:

Hydrodynamic properties of poly- $\beta$ -vinyl naphthalene macromolecules in benzene

PERIODICAL:

Vysokomolekulyarnyye soyedineniya, v. 4, no. 4, 1962, 540-545

TEXT: Diffusion constants, sedimentation coefficients and intrinsic viscosity of 10 fractions of poly- $\beta$ -vinyl naphthalene (P- $\beta$ -VN) in benzene were studied. The Mark - Kuhn - Houwink relations in this solvent were found to have the form  $D = 3.5 \cdot 10^{-4} \cdot M_{S,D}^{-0.57}$  for the diffusion coefficient, and  $[\eta] = 6.6 \cdot 10^{-5} \cdot M_{S,D}^{0.71}$  for the intrinsic viscosity. The molecular weight  $M_{S,D}$  was determined from Svedberg's equation. The hydrodynamic behavior of P- $\beta$ -VN, which is determined by viscosity and diffusion, is completely normal and confirms the universal character of the empirical constant  $A = \eta_0 D (M[\eta])^{1/3} T^{-1}$ . It's mean value was  $(3.1 \pm 0.1) \cdot 10^{-10}$  erg/degree. This

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# Hydrodynamic properties of ...

corresponded to the value of this constant determined for other polymers and again confirmed the usual correlation of hydrodynamic properties of P- $\beta$ -VN during translation and rotation. The estimate of the relation between dimensions of P- $\beta$ -VN molecules in benzene and their dimensions during free rotation  $(\bar{h}^2)_0^{1/2}(\bar{h}^2)_f^{1/2}$ , which characterizes the hardness of the molecular structure, made by means of the previously determined swelling parameter (Ref. 9: V. Ye. Eskin, K. Z. Korotkina, Vysokomolek. soyed., 2, 272, 1960)  $\alpha^3 = ([\eta]/[\eta]_0) = 1.2$ , produced a mean value of 2.6.  $((\bar{h}^2)_0^{1/2} = (\bar{h}^2)_D^{1/2}/\alpha$  are undisturbed dimensions of the macromolecule). This amount, which slightly exceeds the corresponding values for most of the linear polymers, showed (e. g. in comparison with polystyrene) that the substitution of the benzene ring by naphthalene increases the thermodynamic hardness of the macromolecule. It was found that the dependence of the diffusion coefficient D on the concentration of one of the P- $\beta$ -VN fractions with  $M = 3.5 \cdot 10^6$  is only slight in CCl<sub>4</sub> and more marked in benzene. This confirms that the dependence on the concentration is mainly determined by the thermodynamic interaction between polymer and solvent. (Ref. 13: V. N. Tavetkov, S. I. Card 2/3

15.8100

44267  
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B101/B186

AUTHORS: Tavetkov, V. N., Magarik, S. Ya., Klenin, S. I., Eskin, V. Ye.

TITLE: Synthesis of graft copolymers. II. Dimensions, configuration, and optical properties of the macromolecules of the graft methyl methacrylate - styrene copolymer

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 1, 1963, 3 - 10

TEXT: Polystyrene of molecular weight  $\approx 2 \cdot 10^3$  was grafted on polymethyl methacrylate, molecular weight  $7 \cdot 10^4$ . Refractometric examination of the copolymer composition showed the molar part of polystyrene to be 0.9. The average-weight molecular weight of  $\approx (0.5 - 0.6) \cdot 10^6$  was determined by light scattering. Analysis of the diffusion curve proved the content of the low-molecular components to be no more than 5-10%. The optical anisotropy of the copolymer was determined by flow birefringence in bromoform. According to W. Kuhn and H. Kuhn. (Helv. chim. acta, 26, 1394, 1943; 28, 1553, 1945);  $870 \cdot 10^{-25} \text{ cm}^3$  is found for the difference  $(\alpha_1 - \alpha_2)$  in main

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Synthesis of graft copolymers. II. ...

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B101/B186

polarization capacities of one macromolecular segment of the copolymer; for polymethyl methacrylate, this value is  $(2 - 20) \cdot 10^{-25} \text{ cm}^3$ , and for polystyrene it is  $-(140 - 200) \cdot 10^{-25} \text{ cm}^3$ . Based on Kuhn's theory, the theoretical calculation of the anisotropy of one segment of the principal methyl methacrylate chain with short graft polystyrene chains, proved that  $(\alpha_1 - \alpha_2)$  is  $+220 \cdot 10^{-25} \text{ cm}^3$ , when the polystyrene polymerization coefficient is 40 and when the molar part of polystyrene is 0.9. The experimental value, which is four times as high, is explained by the fact that the chain stiffness of the graft copolymer is higher than that of homopolymers. Conclusion: The optical anisotropy of a branched polymer may differ considerably from the anisotropy of its components. There are 5 figures and 1 table. X

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR  
(Institute of High-molecular Compounds AS USSR)

SUBMITTED: July 1, 1961

Card 2/2

TSVETKOV, V.N.; KLENIN, S.I.; MAGARIK, S.Ya.

Optical anisotropy of polymethyl methacrylate - polystyrene  
graft copolymers. Vysokom. soed 6 no.3:400-405 Mr'64.

(MIRA 17:5)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.



L 20784-65 FWT(m)/EPF(o)/EWP(j) Fe-4/Pr-4 AFWL/AEDC(a)/ASD(f)-3/ASD(p)-3/  
 AFM/RN  
 ACCESSION NR: AP5003798 3/0190/64/006/008/1420/1425

AUTHOR: Frenkel', S. Ya.; Klenin, S. I.

TITLE: Hydrodynamic properties of polycarbethoxyphenylmethacrylamides. III B

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 6, no. 8, 1964, 1420-1425

TOPIC TAGS: macromolecular chemistry, hydrodynamics, amide

ABSTRACT: Previous investigations of one of the authors Frenkel' revealed anomalies in the hydrodynamic behavior of p-polycarbethoxyphenylmethacrylamide in such solvents as ethyl acetate and methylformamide, which were explained at that time by the development of structural rigidity in the macromolecules of this compound, giving rise to the possibility of the formation of intrachain hydrogen bonds between the amide groups or amide hydrogen and the carbonyl oxygen of the carbethoxy group. In the light of later studies indicating the impossibility of the formation of helical macromolecules, a new study was made of this compound, using four different methods: sedimentation, diffusion, viscosimetry, and light scattering. Measurements of the sedimentation, diffusion, and intrinsic viscosity in dimethylformamide and ethyl acetate confirmed the anomaly of.

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the hydrodynamic properties of p-polycarbethoxyphenylmethacrylamide in these solvents, manifested in deviations from the classical ratios between the hydrodynamic characteristics and the molecular weight. The authors explain the anomaly by a progressive increase in the structural rigidity of the macromolecules with increasing molecular weight above a certain critical value  $M$  (of the order of  $10^6$ ), as a result of the formation of a system of intrachain hydrogen bonds, producing a semirigid model with internal loops and macrocycles. Consecutive addition of completed external macrocycles is manifested in the tendency toward increasing asymmetry of the coils with increasing molecular weight. Below the critical molecular weight, corresponding to incomplete macrocyclic configurations, pronounced polydispersion of the shape is manifested, leading to a discrepancy between the average molecular weights determined by different methods, while above the critical value, asymmetric configurations predominate, with a corresponding anomalous increase in the hydrodynamic interactions. In "active" solvents, competing with the polymer for hydrogen bonds, or in o-polycarbethoxyphenylmethacrylamide, where there are no intrachain hydrogen bonds, the anomaly of the hydrodynamic properties disappears. The results of this study are compared with the data of other authors, and the discrepancies are shown to be only apparent. Orig. art. has: 3 formulas, 3 graphs, 1 table.

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